AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A hearing aid comprising

a front microphone for outputting a front signal X_{front};

a back microphone for outputting a back signal X_{back};

a delay processor adapted for processing said front signal and said back signal according to a parametric input and for outputting a directionally processed signal according to the formula:

$$Y = X_{front} * (1 - omni * e^{-j\omega T}) + X_{back} * (omni - e^{-j\omega T})$$

where *omni* is a parametric control signal and T is a predetermined acoustic delay;

a signal processor for processing said directionally processed signal; and

a parameter control means for estimating said directionally processed signal and for setting a value of the ~~parameter~~parametric input *omni* suitable for minimizing said directionally processed signal.

2. (Original) The hearing aid according to claim 1, wherein said parameter control means is adapted for controlling the parameter *omni* within the range from minus 1.5 to plus 1.0.

3. (Original) The hearing aid according to claim 1, wherein said parameter control means is adapted for controlling the parameter *omni* to achieve a pair of null directions, symmetrical about the 180° direction.

4. (Currently Amended) The hearing aid according to claim 1, wherein said parameter control means is adapted for minimizing said directionally processed signal by applying an LMS ~~algoritm~~algorithm.

5. (Currently Amended) ~~The~~A hearing aid ~~according to claim 1, wherein said delay processor comprises~~comprising

a front microphone for outputting a front signal X_{front};

a back microphone for outputting a back signal X_{back};

a set of frequency band filters for splitting said front signal X_{front} and said back signal X_{back} into respective input channel signals;

a set of channel delay processors for separately processing respective input channel signals according to respective channel ~~parameters~~parametric inputs and for outputting respective directionally processed channel signals according to the formula;

$$Y = X_{front} * (1 - omni * e^{-j\omega T}) + X_{back} * (omni - e^{-j\omega T})$$

where *omni* is a parametric input and T is a predetermined acoustic delay;

a combining unit for combining said directionally processed channel signals to provide a combined, processed, signal; and a set of parameter controllers for separately processing respective directionally processed channel signals and for setting respective channel values of the parametric input *omni* suitable for minimizing said directionally processed signal ~~ouputting respective channel parameters; and~~

~~a combining unit for combining said directionally processed channel signals to provide said directionally processed signal~~.

6. (Original) The hearing aid according to claim 1, wherein said signal processor is adapted for processing said directionally processed signal for compensation of a hearing impairment.

7. (Currently Amended) A hearing aid comprising

a front microphone for outputting a front signal X_{front};

a back microphone for outputting a back signal X_{back};

a set of frequency band filters for splitting said front signal and said back signal into a set of front input channel signals and a set back channel signals;

a set of channel delay processors for separately processing said front input channel signals and said back input channel signals according to respective parametric inputs and for outputting a set of directionally processed channel signals, each according to the formula:

$$Y = X_{front} * (1 - omni * e^{-j\omega T}) + X_{back} * (omni - e^{-j\omega T})$$

where *omni* is a parameter of a respective channel and T is a predetermined acoustic delay;

a set of parameter controllers for separately processing respective directionally processed channel signals and ~~ouputting~~outputting respective channel parameters; and

a combining unit for combining said directionally processed channel signals to provide a combined directionally processed signal.

8. (Currently Amended) A method of controlling a hearing aid, comprising

providing from a front microphone a front signal X_{front};

providing from a rear microphone a back signal X_{back};

processing in a delay processor the front signal X_{front} and the back signal X_{back} ~~signals from at least a front microphone and a back microphone~~ according to a parametric input *omni* for outputting a directionally processed signal according to the formula:

$$Y = X_{front} * (1 - omni * e^{-j\omega T}) + X_{back} * (omni - e^{-j\omega T})$$

where ~~T~~*omni* is a parametric input and T is a predetermined acoustic delay;

estimating said directionally processed signal; and

setting a value of the ~~parameter omni~~parametric input *omni* suitable for minimizing said directionally processed signal.

9. (Original) The method according to claim 8, comprising controlling the parameter *omni* within the range from 1.0 to -1.5.

10. (Original) The method according to claim 8, comprising controlling the parameter *omni* to achieve a pair of null directions, symmetrical about the 180° direction.

11. (Currently Amended) The method according to claim 8, comprising minimizing the ~~the~~ output signal from the delay processor by applying an LMS-~~algoritm~~algorithm.

12. (Currently Amended) ~~The~~A method of controlling a hearing aid, comprising

providing from a front microphone a front signal X_{front};

providing from a rear microphone a back signal X_{back};

splitting the front signal X_{front} and the back signal X_{back} according to frequency into respective band-limited signals,

processing in a delay processor the band-limited signals with respective channel delay processors to produce output signals in respective frequency bands according to respective channel values of a parametric input *omni* for outputting directionally processed signals in respective bands according to the formula:

$$Y = X_{front} * (1 - omni * e^{-j\omega T}) + X_{back} * (omni - e^{-j\omega T})$$

where *omni* is a parameter of a respective channel and T is a predetermined acoustic delay;

estimating said directionally processed signal; and

setting respective channel values of the parametric input *omni* suitable for minimizing said directionally processed signal~~according to claim 8, comprising splitting the input signals into separate frequency bands, and processing the band-limited signals with respective channel delay processors and parameter controllers to minimize the output signals in respective frequency bands~~.

13. (Original) The method according to claim 12, comprising combining the signals from the respective channel delay processors; and processing said directionally processed signal for compensation of a hearing impairment.

14. (Withdrawn) A noise reduction system for a hearing aid, comprising

a directional controller capable of adjusting the sound receptive property of the microphone system to change, according to a control parameter, between an omnidirectional characteristic, a directional characteristic and a directional characteristic with moving null-directions; and

an adaptive controller adapted for automatically adjusting the control parameter so as to move a null-direction to reduce the noise signal.

15. (Withdrawn) A method for reducing noise in a hearing aid, comprising:

receiving an acoustical signal in a microphone system,

processing outputs of the microphone system in a parameter controlled delay processor adapted for changing, according to a control parameter, between an omnidirectional characteristic, a directional characteristic and a directional characteristic with moving null-directions, and

adjusting the parameters that control the delay processor with an adaptive controller so as to minimize the output signal from the delay processor.